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13. ABSTRACT *(Maximum 200 Words)* The Czech Republic through its Military Academy in Brno, Czech Republic, is establishing an onsite Simulation Center to train Commanders and Staffs. The first priority for the center is to train commanders and staffs to perform their tasks using simulations, especially for collective training with other NATO countries. Through discussions with STRICOM and engineers from the ADST II Program, the Czechs selected the Modular Semi-Automated Forces (ModSAF) and Janus simulation software as the starting point for their simulation capability. In addition, the Czechs initiated a Foreign Military Sale (FMS) case to acquire the software and technical assistance through a Government-to-Government transaction. The Czech military intends to use the center to train commanders, staffs, and units so that they can function in a NATO environment with understanding and confidence. They also expect the simulation center training will demonstrate that the tasks learned in the simulation environment actually work in the field.

Building the overall simulation environment began with an analysis of the requirements leading to design of an open system simulation architecture for the Czech Military Academy (MA). This Delivery Order (DO) addresses the overall design, installation, and integration of an initial simulation capability at the Czech Military Academy in Brno. It also

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Executive Summary

The Czech Republic through its Military Academy in Brno, Czech Republic, is establishing an onsite Simulation Center to train Commanders and Staffs. The first priority for the center is to train commanders and staffs to perform their tasks using simulations, especially for collective training with other NATO countries. Through discussions with STRICOM and engineers from the ADST II Program, the Czechs selected the Modular Semi-Automated Forces (ModSAF) and Janus simulation software as the starting point for their simulation capability. In addition, the Czechs initiated a Foreign Military Sale (FMS) case to acquire the software and technical assistance through a Government-to-Government transaction. The Czech military intends to use the center to train commanders, staffs, and units so that they can function in a NATO environment with understanding and confidence. They also expect the simulation center training will demonstrate that the tasks learned in the simulation environment actually work in the field.

Building the overall simulation environment began with an analysis of the requirements leading to design of an open system simulation architecture for the Czech Military Academy (MA). This Delivery Order (DO) addresses the overall design, installation, and integration of an initial simulation capability at the Czech Military Academy in Brno. It also provides support for the simulations for a twelve-month period. This environment is to support a range of simulation applications including ModSAF and Janus based on a common suite of low cost hardware.

The main focus of the first phase of the project was to ensure that the Czech Center for Simulation and Training Technology (CSTT) was operational prior to the International Simulation Conference (IDET) on 3 - 7 May 1999 at Brno. Phase 1 also supported the Czech Military Academy with presentations, demonstrations and exercises during the IDET. In addition, part of the effort during Phase 1 was dedicated to defining the requirements for follow on work and simulation upgrades that would take place during Phase 2.

The main objectives of the Phase 1 Czech Simulation Center project included:

  a. Installation, configuration and setup of the STRICOM-provided ModSAF and Janus software on existing computers at the CSTT.

  b. Instruction to Czech Staff on the procedures necessary to operate the simulations in support of training exercises and combat development experiments.

  c. Assistance with the integration of modeling and simulation into the Czech Military Academy training strategy.

  d. Provision of appropriate support documentation.

  e. Support of a demo of the simulation system at the 1999 IDET conference in Brno.

As part of the Planning and Analysis task, ADST II personnel participated in a site survey and technical interchange meeting at the MA in Brno from the 5th through the 13th of April 1999. This meeting provided insight into the current configuration in the facility, and in the computer resources and networking capabilities available for the configuration of the CSTT. This analysis identified additional hardware/software resources needed to complete the integration and setup of the CSTT.

ModSAF and Janus training were conducted at the Operational Support Facility (OSF) in Orlando from the 12th through the 23rd of April 1999. The Czech Republic delegation included staff officers and support personnel from the MA in Brno.

The Phase 1 effort also provided a simulation demonstration on May 4, 1999 that included a hands-on exercise conducted by Czech and ADST II personnel, and briefings in Czech and English languages.

Future requirements and upgrades to the Czech Military Academy have been defined based on the Czech training requirements (as described in section 4 of this Report), training reports and documentation, and data gathering trips to the Czech Republic. The ADST II team conducted an in-depth analysis of these requirements and formulated the list of future requirements and upgrades. The future requirements for the Military Academy in Brno have been divided into three major categories: infrastructure upgrades, database support, and simulation support. Each major category with associated sub-categories is shown below. A Technical Approach document with a priced proposal has been generated in parallel with this Final Report to define the main elements that need to be completed during the Phase 2 effort. The follow-on planning effort continues the focus on an open architecture, and adding simulation capabilities according to priorities established by the Czech Government during a meeting in Brno (Czech MA, STRICOM, and ADST II) at the end of June 1999. The following table describes the defined Phase 2 and Phase 3 efforts.

PROPOSED FUTURE REQUIREMENTS AND UPGRADES	PHASE 2 EFFORT	PHASE 3 EFFORT
Infrastructure Support		
• Upgrading the 10Mbps network (Ethernet) at the Military Academy to 100Mbps (Fast Ethernet).		X
• Adding a Video Teleconference Capability (VTC) between the Military Academy, the Training Center at Vyskov, and a General Staff location in Prague.	X	X (to add Vyskov)
• Providing simulated radio communication capability.		X
• Providing an AAR capability.	X	
• Providing long-haul communication capabilities for collective training and After Action review (AAR) with remote sites within the Czech Republic, and with NATO.	X	X (to add Vyskov)
• Integrating Czech and US-developed DIS constructive and virtual simulations into the network.		X
• Integrating the simulation center with the training center at Vyskov and its future virtual simulators and instrumented ranges.		X
Database Support		
• Creating a terrain database of selected Czech Republic terrain to be used by ModSAF and the Stealth viewer.	X	
• Providing a terrain database generation tool for Janus.		X
Simulation Support		
• Upgrading the Janus software to version 7.1 International (Already approved in the FMS case).	X	
• Upgrading the ModSAF software to version 5.0 International (Requires a modification to the current LOA).	X	
• Providing additional simulations such as Operations Other Than War (OOTW) and Strategic Operations (Requires a modification to the LOA).		X
• Support HLA transition.		X

CZECH SIMULATION CENTER SUPPORT
FINAL REPORT, RESULTS OF ANALYSIS

1   INTRODUCTION

1.1   Purpose

The purpose of this Final Report is to document the ADST II effort that supported the initial operation of Czech Simulation Center, and to present results of analysis for follow on work. In accordance with the Government Statement of Work (SOW), this Final Report includes a description of the Center of Simulation and Training Technologies (CSTT) environment and a recommended configuration with an associated cost proposal.

1.2   Contract Overview

This Final Report has been developed in accordance with the requirements of DO #0115, CDRL AB01 under the Lockheed Martin ADST II project, Contract No. N61339-96-D-0002, and administered by the U.S. Army STRICOM.

DO #0115 required the ADST II team to perform an analysis, develop a plan, and conduct the installation, configuration, and operation of ModSAF and Janus at the CSTT located at the Military Academy (MA) in Brno. This effort also included training Czech personnel in the installation and operation of the two simulations. Finally, a follow-on proposal was required to provide detail and cost for training support and equipment upgrades to the Simulation Center.

1.3   Background

The Czech Republic (CZ) through its Military Academy in Brno is establishing a Simulation Center as part of its entry into the North Atlantic Treaty Organization (NATO). One of the primary purposes of the Simulation Center is to train Commanders and Staffs to support NATO interoperability including NATO procedures and standards. The main simulation software, Modular Semi-Automated Forces (ModSAF) and Janus were acquired through a Government-to-Government transaction. The Simulation Center was established utilizing these two training programs. Since Czech Operational Tempo (OPTEMPO) is extremely limited, maximum use of simulations is necessary. The Czech Military has constructed a Simulation Center at the Military Academy in Brno, using Commercial-Off-The Shelf (COTS) equipment consistent with the U.S. Department of Defense (DoD) Defense Information Infrastructure (DII) Common Operating Environment (COE). Although there are many uses for live, virtual and constructive simulations, the focus at the MA is to use simulations to train commanders and staffs. Their priority is collective training with other NATO countries. The Czech military must build understanding and confidence by commanders, staffs and units that they can function in a NATO environment. They also expect the simulation center training to demonstrate that the tasks learned in the simulation environment actually work in the field.

1.4   Project Overview

The objective of this effort was to design and support an integrated simulation environment at the Czech Simulation Center in Brno that would support a range of

simulation applications including ModSAF and Janus. The intent is to move over time toward a PC/NT-based environment. This effort required a common suite of hardware and a network that could be configured and used for one or more applications at the same time.

ADST II responsibility for Phase 1 of this project was to ensure that the Brno facility was operational (with an initial operational capability) prior to the International Simulation conference (IDET) scheduled for 3 through 7 May 1999 at Brno.

Detailed tasks to be completed included:

a. Planning and analysis of current training facilities and training needs.

b. Installation, configuration, and operational verification of the Czech Simulation Center in Brno, Czech Republic.

    1) Install, configure, and make operational the STRICOM-furnished ModSAF and Janus software on existing computers at the Brno facility (initial setup).

    2) Configure the simulations to support training of Czech Army officers at the platoon, company, battalion, and brigade level (continuing support).

c. Support the IDET conference at the Military Academy in Brno in May 1999.

d. Instruction of the faculty of the Czech Simulation Center in the procedures necessary to setup and operate the simulations in support of training exercises (continuing support).

e. Assistance to the faculty in creating exercise scenarios and after action reviews (follow on support).

f. Provision of troubleshooting and performance tuning expertise necessary to ensure optimum performance of the facility during the period of performance (follow on support).

g. Assistance with the integration of modeling and simulation into the MA training strategy (follow on support).

h. Cooperation with the faculty of the Military Academy in designing training exercises and experiments (follow on support).

i. Provision of wargaming and technical support for the operation of the facility and conduct of experiments (follow on support).

j. Provision of appropriate support documentation (follow on support).

2 APPLICABLE DOCUMENTS

2.1 *Government*

a. Contract No. N61339-96-D-0002, DO #0115, dated 1 April 1999

b. Statement of Work (SOW) AMSTI-99-W025, Czech Simulation Center Support V 1.0 dated 29 March 1999

2.2 *Non-Government*

a. Technical Approach, Czech Simulation Center Support V 1.0 dated 22 July 1999

    b. Operator/User Train-up Documentation, Czech Simulation Center Support, CDRL AB02

3 Requirements

3.1 Engineering Activities

3.1.1 Planning and Analysis – Phase 1

3.1.1.1 Planning and Coordination Activities

Initially, a Foreign Military Sales (FMS) case was prepared by Mr. John Daniele of STRICOM (407-384-5104) and was approved by the Czech Ministry of Defense (MoD) on March 26, 1999. The FMS case provided for the sale of software licenses for the international versions of ModSAF (4.0) and Janus (6.3.3), and technical and training support. The approved FMS case acted as an export license for those commercial activities that STRICOM put under contract to perform the technical and training services specified in the FMS case.

The ADST II team prepared and conducted a kickoff meeting on 2 April 1999 at STRICOM. The purpose of this meeting was to coordinate the activities necessary for the completion of the this effort including:

    a. Meeting in Brno to start preliminary discussions with Czech personnel and staff, and to conduct a site survey of the MA and the CSTT in Brno.

    b. Acquisition, delivery and shipment of required software: ModSAF (4.0) and Janus (6.3.3)

    c. Support to the IDET conference on 3-7 May 1999 and at the MA in Brno.

    d. Refinement of the requirements, milestones and follow-on activities.

3.1.1.2 Analysis Efforts

A site survey and data gathering trip to Brno was conducted from the 5th through the 13th of April 1999. ADST II personnel (Philip Holden, John Abernathy, Emory Hicks) and STRICOM personnel (John Daniele) participated in the meetings. A list of the events that occurred during the trip is provided next:

Monday, 5 April 1999:

    Departed to Prague, 2:40 PM

Tuesday, 6 April 1999:

    The STRICOM/SAIC team arrived to Prague and met with LTC Cancel of the U.S. embassy, and traveled to Brno (over two hours' drive) the same day.

Wednesday, 7 April 1999:

    Met the Commander of the MA, COL Kotek; toured the facility; conducted initial presentations by STRICOM/SAIC and by the MA; other discussions.

Thursday, 8 April 1999:

    Presentations by the Command and Staff Faculty of the MA on the training

organization, exercises performed; discussions on the M&S introduction into the present training system, detailed Simulation Center site and equipment review.

Friday, 9 April 1999:

Visited the Army training facility at Vyskov near Brno (the site for future virtual and live simulations); visited the Czech M&S contractors (E-COM and VRG companies).

Saturday, 10 April 1999:

Conducted final discussions at the MA in Brno, then drove to Prague.

Met Maj. Gen. Siba, the head of "J3" Sector of the GS (in charge of training)

Met the Chief of the General Staff, Lt. Gen. Sedivy

Sunday, 11 April 1999: Open

Monday, 12 April 1999:

Met the Deputy Minister of Defense Tomas, at the MoD in Prague.

Met Lt. Col. Cancel, Chief of ODC, US Embassy, and his deputy Capt. Midkiff

Tuesday, 13 April 1999:

Departed from Prague, 8:55 AM

An evaluation of the computer infrastructure and resources was conducted during this period to determine the computing environment compatibility, and the steps, actions and additional materiel necessary for the installation and configuration of ModSAF (4.0) and Janus (6.3.3) at the Czech CSTT in Brno, and of other simulations. Other items of interest discussed during this trip included:

a. Exercise development for the Janus environment

b. Preparations for the IDET demonstrations

c. Technical support to include:

- Sustainment training

- New feature insertion

- Specific Czech Program Trouble Report Resolution

d. Responsibilities and schedule for actions leading up to the IDET conference

e. Responsibilities and schedule for actions after the IDET conference

The following table provides a list of the hardware and software components that are currently part of the CSTT at the MA in Brno (as determined during the trip):

4

Table 3.1.1.2-1. Existing Hardware and Software Components at the MA

COMPONENTS	QTY
Compaq Server ProLiant 5500 XEON/400 512 KB 4xCPU PII XEON 400 Disc Array 40 GB 17" Compaq S 700 Monitor UPS	1
WIN NT 4.0 Server, multiple licenses Compaq Server ProLiant 1600, PII/400 512 KB 256MB RAM HDD - 9.1 GB 15" Compaq V50 Monitor UPS	1 2
Microsoft Windows NT Version 4.0	
WIN NT 4.0 Work Station, multiple licenses	1
Workstation, Compaq DT 6450, 256 MB RAM HDD 9.1 GB Video adapter Matrox MilleniumG200AGP 8MB video memory 21" Compaq V100 Monitor UPS	53
Workstation HP 9000 -715/100 HP UX 10.2 6 GB Disk Drive Monitor SONY 15" CPD- 100 EST, TCO 92 External HDD, 4.5 GB Ultrastar 9ES UPS Back 650MI, 300VA, PowerChute for HP-UNIX	1
Plotter HP DesignJet 755 CM	1
Printer A3 HP 2500 CM	1
Printer A4 HP 4000 CMKS22	1
Copy machine Minolta A3 2010, B/W	1
Copy machine Minolta A3 color CF 900	1
PRESENTATION AND PLAYBACK EQUIPMENT	QTY
LCD data projector PROXIMA Pro AV DP 9310	3
Screen DA LITE DA-Snap	3
Digital camcorder DV TRV900E	1
Video adapter DV video	1

A Technical Assessment identifying requirements to upgrade the CSTT configuration is provided in the Technical Approach document (Document # ADST-II-CDRL-CSCS-9900166) for this project. This document also provides a list of additional hardware and software components required.

While conducting the data gathering and site survey in Brno, the preparation for the ModSAF/Janus training class for Czech personnel in Orlando started.   Orlando Operational Support Facility (OSF) personnel coordinated the following efforts:

   a.   Preparation of a classroom for training at the OSF.

   b.   Preparation of course materials.

   c.   Delivery of training at the OSF for Czech personnel.

3.1.2 Development, Modification and Configuration Activities – Phase 1

3.1.2.1 *Installation and Management of Software*

The first step (Phase 1) in the configuration support of the CSTT in Brno included the installation of the ModSAF and Janus simulation software in selected PCs. A team of ADST II engineers went to the Czech Republic the week of 16 April 1999 to start the installation of the Government-provided ModSAF and Janus simulation software. Software was installed on 13 of the 53 Compaq PCs that were available, as follows:

    a. Linux was acquired for installation on the Compaq PCs in Brno.

    b. Installed Linux operating system on the 13 PCs.

    c. Installed Janus 6.3.3 on the HP 9000 Server.

    d. Installed Janus RTX on selected PCs.

    e. Installed ModSAF on PC server.

    f. Installed ModSAF on selected ModSAF designated controller/operator workstation positions.

These 13 PCs were used for the IDET demonstrations. The other 40 PCs were still in the original cartons. Either the Czech staff will configure them or the ADST II team will configure them during the Phase 2 effort. Prior to departure, ADST II personnel provided training to the Czech staff in the configuration of the PCs and the installation of ModSAF and Janus.

3.1.2.1.1 Installed Products

This section provides additional detail on the software products and associated hardware platforms that were installed for the IDET demonstrations.

3.1.2.1.1.1 ModSAF

The ModSAF system has been in use since the late 1980's. It has proven to be a versatile battlefield simulator, and has been used in training exercises to simulate forces ranging from single vehicles to hundreds of entities. The ModSAF simulation models include ground vehicles; batteries of artillery with modeling of Fire Direction Centers (FDCs); teams of dismounted infantry with anti-tank or air-defense missiles; flights of fixed-wing and rotary-wing aircraft.

When using these models, the user has the ability to set the unit's fire permissions and target priorities using ModSAF's Rules of Engagement (ROE) editor. In addition, the user can select a unit and issue it an Immediate Intervention (II), thereby taking immediate control. The II capability is similar to a military FRAGmentary Order (FRAGO).

Terrain artifacts and obstacles can be added to the simulation using the Obstacle Editor. This tool lets the user create minefields, tank ditches and dynamic terrain obstacles, such as rock drops, dragon's teeth, craters, and wire.

3.1.2.1.1.2 Janus

Janus is a man-in-the-loop tool for providing entity-level simulations of coordinated units. Janus is designed to train synchronization of maneuvers, fire support, mobility /

counter-mobility / survivability. Its ultimate purpose is to provide brigade / battalion commanders with a staff training tool. Because Janus has a simple and intuitive interface for the operator, users can be taught to interact with the simulation in four to twelve hours. Janus 6.3.3 uses PCs as workstations, and a HP-9000 UNIX computer as a server.

3.1.2.1.1.3 Debian Linux

Debian Linux is an independent POSIX implementation and includes true multitasking, virtual memory, shared libraries, demand loading, proper memory management, TCP/IP networking, and other features consistent with UNIX-type systems. Developed under the Debian/GNU General Public License, the source code for Debian Linux is freely available to everyone.

Debian Linux allows 80386 or better personal computers to be used as workstations with UNIX as the operating system. Debian Linux can be run on networks of machines, and provides support for distributed computing and telecommunications.

3.1.2.1.1.4 Motif V2.0

Motif is a standard graphical user interface (GUI) used by many hardware and software platforms. It is one of the primary user interfaces for UNIX-based operating systems. It is needed in order to run ModSAF in the 53 Compaq PCs at the CSTT. Motif provides users of laptops and PCs with the screen appearance and behavior of applications that are usually found on workstations, mainframes, and large computers. Motif is also the base GUI tool kit for the Common Desktop Environment (CDE) that provides a single standard graphical desktop and desktop tool set for all platforms that support the X Window System. Motif provides a high degree of portability, interoperability, and scalability for applications.

The elements of Motif V2.0 are:

a. Application Programming Interface – specifies the interface to the User Interface Tool kit and Motif Resources Manager.

b. User Interface Tool kit – provides a standard GUI layer and library of graphical interfaces.

c. User Interface Language – is an application development tool that supports rapid design and prototyping.

d. Window Manager – is a separate application that offers a standard environment for manipulating application windows.

e. Internationalization – it is a state-of-the-art solution for internationalizing application user interface.

Manufacturer's requirements for use of Motif V2.0 are Linux Operating System, Intel Pentium Class processor, 16 MB RAM minimum (48 MB recommended), 30 MB free hard disk space and a CD ROM drive.

3.1.2.1.1.5 Database Development

The existing ADST II Germany terrain database was used to support the Phase 1 effort. The database was 50 Km by 50 Km. A Czech Republic terrain database will need to be developed for future use.

3.1.2.1.1.6 Stealth

The ADST II Stealth gives the Observer/Controller (O/C) personnel a "window" into the virtual battlefield allowing them to make covert observations of the action occurring during the scenario. In addition, through the use of the data logger, the Stealth gives observers and analysts an After Action Review (AAR) capability. The Stealth is a visual display platform that consists of various input devices, and a video display that provides the operator with a 3D view of the battlefield.

The Stealth permits the controller to fly around the virtual battlefield and view the simulation without interfering with the action. The features of the Stealth allow the observer to survey the virtual battlefield from a variety of different perspectives, including:

a. Tethered View - Allows the user to attach unnoticed to any vehicle on the virtual battlefield.

b. Mimic View - Places the user in any vehicle on the virtual battlefield and provides the same view as the vehicle commander.

c. Orbit View - Allows the operator to remain attached to any vehicle on the virtual battlefield and to rotate 360° about that vehicle, while still maintaining the vehicle as a center point of view.

d. Free Fly Mode - Permits independent 3-D movement anywhere in the virtual battlefield.

3.1.2.2 Configuration Activities

The delivery of ModSAF, Janus, and terrain database (Graphenfals, Germany) to the MA in Brno was coordinated via STRICOM (Mr. John Daniele). STRICOM shipped the software, software tools (e.g., Motif), hardware components, and associated technical and training documentation using previously coordinated Government-to-Government agreements via the U.S. Embassy in Prague. For this activity, we also borrowed certain ADST II assets. These assets included:

a. The Stealth subsystem (VR Link on an SGI Max Impact computer).

b. A Dial-A-Tank (Mak Technologies) application, running on an SGI Indy.

c. A data logger capability (Simulyzer running on an SGI Max Impact computer).

In addition, we purchased an extra video amplifier/splitter to connect the stealth to a projector.

At the conclusion of the demonstration activity, all assets except for the amplifier/splitter were returned to ADST II.

3.1.2.3   Demonstration Configuration at the Military Academy

3.1.2.3.1   System Configuration and Layout

The CSTT at the MA in Brno contains a variety of simulation systems, networks, and simulation software capabilities. The CSTT assets are interconnected on Ethernet LANs. The network operating system was Microsoft NT v4. Simulation assets used Distributed Interactive Simulation (DIS) 2.04 protocol. A standard DIS LAN configuration was used with 10BaseT/AUI cable. Additionally, a separate PC was configured to permit the ADST II personnel in Brno to FTP and have access to the Orlando corporate and simulation network for support and maintenance functions.

Figure 3.1.2.3.1-1 shows the network of equipment that was setup at the MA in Brno for demonstration of the battle simulation software capabilities (ModSAF and Janus) as part of the simulation training tools to be available at the CSTT.
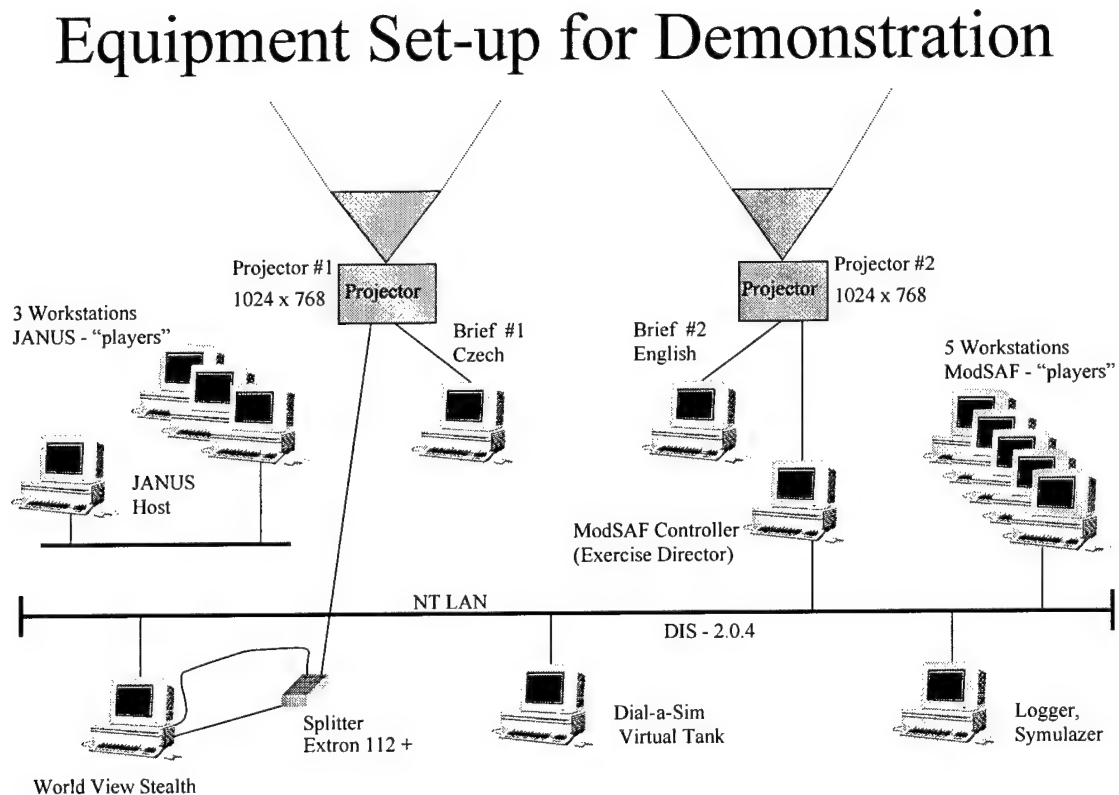
Equipment Set-up for Demonstration

Figure 3.1.2.3.1-1. Equipment Setup for Demonstration at the MA in Brno

A graphic display (layout) of the area set for exercise demonstration is shown in Figure 3.1.2.3.1-2.
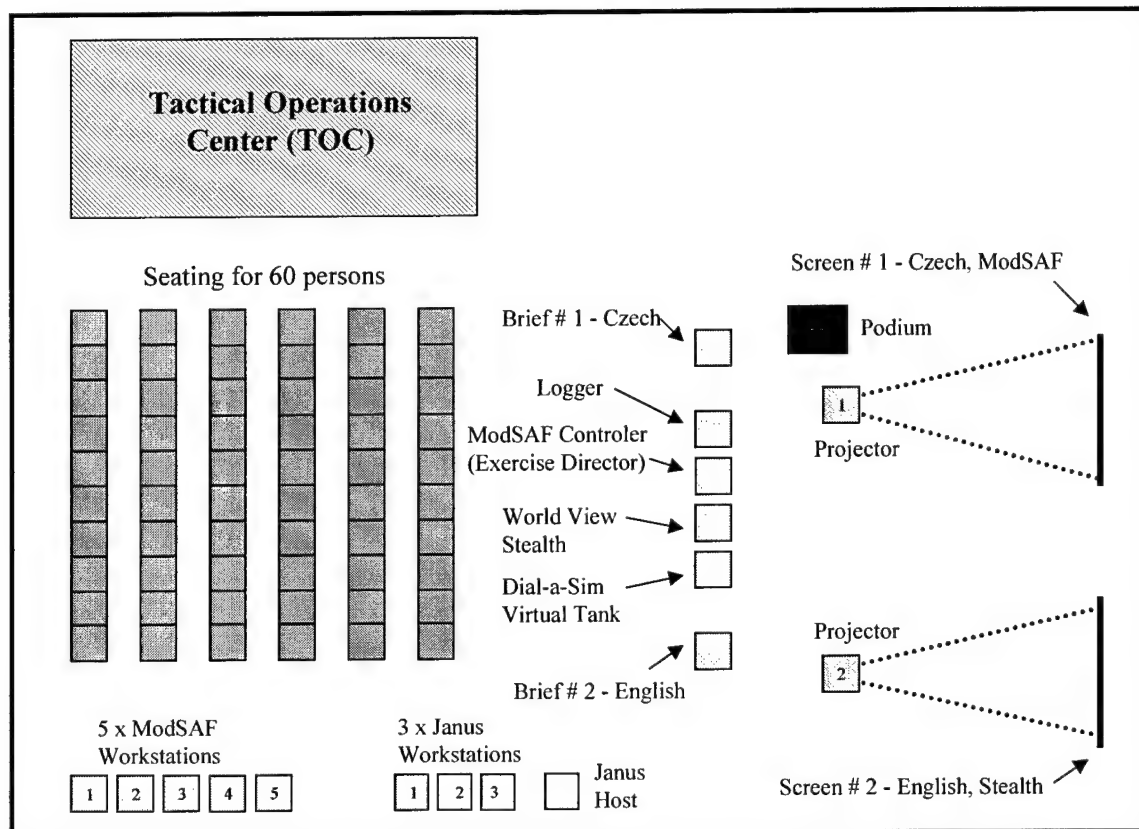

Figure 3.1.2.3.1-2. Demonstration Area Layout

3.1.2.4 Demonstration Configuration at the IDET Conference

In addition to the demonstration at the Military Academy, a simple null modem network linking a ModSAF machine (Czech PC) and a Stealth Machine (ADST II SGI Max Impact) was configured for the military academy booth at the IDET conference. The Stealth system provided a 3-D view of the exercise being simulated on the ModSAF system.

3.1.3 Application Support – Phase 1

3.1.3.1 Operator/User Train-up

The 2-weeks ModSAF/Janus training for selected Czech MA Staff personnel was conducted at the OSF in Orlando on 12-23 April 1999. This training trip also gave the Czech Staff an opportunity to see the variety of simulation systems and operations at a unique facility in the USA; and establish professional contacts with the designers, training specialists, operators, and users of these simulations.

The Simulation Lab in the second floor of Mod 2B at the Lockheed Martin plant was configured as a classroom by LMIS service technicians, and equipped with the following computer equipment:

a. One each HP 9000 computer with Janus 6.3.3.

b. 7 each PC computers with Linux and ModSAF version 4.0 (International) and the Janus RTX.

c. One network hub (and associated cabling) connecting the computers in a stand-alone network located entirely inside the classroom. There was no connection to the ADST II network.

Eleven Czech staff attended the ModSAF/Janus training:

a. Capt. Dalibor Prochazka, manager CSTT Brno, MA Brno, Czech Republic

b. Martin Klicnar, project manager CSTT, VR Group, Czech Republic

c. Col (Ret) Karel Lukas, senior simulation engineer, VR Group, Czech Republic

d. Lt Col (Ret) Vladimir Vrab, training developer, MA Brno, Czech Republic

e. Lt Col Eduard Kristek, Battlemaster, MA Brno, Czech Republic

f. Maj Tomas Rak, scenario developer, MA Brno, Czech Republic

g. Capt Milan Jirsa, system administrator, MA Brno, Czech Republic

h. Maj Miroslav Hopjan, computer engineer, MA Brno, Czech Republic

i. First Lieutenant Ladislav Hagara, system administrator, MA Brno, Czech Republic

j. Maj Vlastimil Maly, computer engineer, MA Brno, Czech Republic

k. Mr. Branislav Vakos, Czech Republic.

Between courses, time was allocated for hands-on practice and experimentation with the simulations.

The UNIX/Linux System Administration course required the students to have knowledge of Linux OS running on the PC platform. Students were taught the installation of the OS,

installation of the simulation applications (ModSAF and Janus), configuration of the OS to support the simulation applications, and system administration to include user and group account creation and permission setting, network setting, and IP addressing, etc.

Training of Czech Staff personnel in their functional area included such areas as military operations and exercise planning. The 2-week training syllabus, topics covered and schedule were provided as part of deliverable CDRL AB02, "Operator / User Train-up". The training was well received – Mr. Skurka, Deputy Commander at STRICOM, conducted the closing ceremonies and handed out diplomas, including the traditional STRICOM pin.

3.1.3.2 Support of the Simulation Conference

A technical support group that included software engineers, Janus war gamers, and a Battle Master was sent to Brno to work with other ADST II software engineers already in Brno. Their mission was to complete configuration of the simulation PCs (13 PCs) for the IDET Conference and to support the Conference demonstration exercises.

A week prior to the start of this International Simulation Conference, the installation and configuration of PCs and simulation software was tested at the CSTT. ADST II personnel troubleshot and fixed the problems that were discovered at that time.

The war gamers and Battle Master expert worked with the Czech training developers to define and configure the exercises that were going to be used during the demonstrations.

Configuration and rehearsal for the demonstration exercises was conducted during the week of 25-30 April 1999. Material, handouts and presentations for the demonstration were also developed at that time.

ADST II personnel actively participated at the MA demonstration on 4 May by assisting in the running of the demonstration exercises. The Prime Minister of the Czech Republic attended one of the demonstration sessions.

3.2 Deliverables

The training documentation, CDRL AB02, was delivered as part of the Phase 1 effort. Translation of selected portions of the training material is currently under negotiation and will become part of the Phase 2 effort. This Final Report, CDRL AB01, satisfies the other deliverable requirement.

4 Future Work

4.1 Definition of Future Requirements

During the course of the Phase 1 effort, Czech personnel made five specific requests that will need to be addressed in the course of the Phase 2 and Phase 3 efforts. Because of the importance of these requests and the issues they raise, they are addressed by proposed disposition and responsible party in Table 4.1-1.

Table 4.1-1. Czech Specific Requests / Issues

Issue	Disposition	Responsible Party
Can the Czech's get ModSAF 5.0?	Most likely yes following DUSA (OR) approval. However, they must formally request it. They can do this at anytime.	Czech's and STRICOM
Can the Czech's get Source Code for Janus and ModSAF?	The Czechs can request it, however source code for Janus is not normally released to foreign Governments. Indication is that source code for ModSAF 5.0 may be released, however they must formally ask, and obtain approval.	Czech's and STRICOM
Can the FMS case contain a statement that addresses all future releases of Janus and ModSAF?	The Czechs can request this. Historically it has not been approved, however, a recent case for the United Arab Emirates (UAE) was approved with certain provisos	Czech's and STRICOM
Can the SOW include the design, installation and operational support needed to connect the Brno facility with other locations such as Vyskov and Prague?	Most likely yes. This issue will be addressed in the Phase 2 technical approach and proposal.	Czech's STRICOM, ADST II (SAIC)
Can the FMS case express STRICOM intent to provide technical support beyond the May 2000 period of performance currently described?	The Czech's can request this and the case will be modified to reflect support until funds are exhausted or not replenished.	Czech's and STRICOM

Table 4.1-2, contains the requirements for the Simulation Center system and their mapping to the requirement source(s). These are based on an analysis of various requirement sources, site visits, discussions and review of the requirements with Czech personnel.

Table 4.1-2. Requirements Allocation

Item Number	Czech Requirement	Proposal Response	Rqmts. Source *
1.	All training is at battalion and brigade level.	ModSAF and Janus are proposed as the initial simulations for use at the CSTT. Both of these simulations are designed to support battalion and brigade level exercises. Later upgrades include JCATS and WARSIM.	1,4
2.	System will be used to train pilots.	This requirement will require a future upgrade to the simulations. ModSAF and Janus can currently model rotary wing (both) and fixed wing (ModSAF) aircraft. However, these are not appropriate for pilot training. We have not included an aircraft trainer in our current proposal. An aircraft trainer can be added to the system at a later date if desired.	1,4
3.	System will be used to train drivers of vehicles	This requirement is covered by the addition of a ground-based manned simulator, currently planned for Phase 3 of the CSTT project.	1
4.	Need to support OOTW.	ModSAF and Janus can be used with limitations for OOTW training. There are other tools that are more robust. We can evaluate them during subsequent phases of the support effort.	1
5.	Must support AAR.	We are proposing a complete AAR support facility based on the ModIOS application. ModIOS capability include event-based data logging and playback, automatic generation of take home packages, stealth view capability and statistics generation.	1
6.	Must be able to use national doctrine, latest tactics.	ModSAF and Janus are open systems that allow construction of new behaviors based on existing behaviors through use of parameters or the construction of entirely new behaviors by modification to the software libraries.	1
7.	Must be able to enter OP Orders in Czech and English directly into the simulation.	ModSAF provides a task execution matrix editor that allows construction of complex scenarios or direct modification of existing orders at any time during scenario execution (FRAGO support). The existing interface is in English but	1

Item Number	Czech Requirement	Proposal Response	Rqmts. Source *
		can be modified to Czech as part of the support effort. The Czech staff have indicated that the do not need a Czech interface for Janus.	
8.	Must support editing and modification of static simulation parameters.	ModSAF provides configuration (reader) files that allow the modification of the simulation constants used to control vehicle models, simulation events and simulation control parameters. Janus has a weapon system database that defines static simulation parameters – vehicles, weapons, indirect fire, mines, weather, sensors, engineering obstacles, smoke, etc.). This capability already exists in the simulations that are being proposed for the CSTT.	1
9.	Provide future versions of ModSAF/Janus	Our proposal includes the upgrade to ModSAF 5.0 and Janus 7.1, as these applications become available.	2
10.	Provide a library of terrain databases including Czech Training areas and possible NATO contingency areas. Would prefer that these databases would be prepared by a Czech agency in conjunction with US technicians.	Our proposal is to have a Czech agency (E-com) prepare the ModSAF terrain databases for the Czech training areas. The Czech MA will be responsible for creating the Janus terrain databases.	2
11.	Provide Czech GUI.	We have submitted proposal items for translating the existing ModSAF and Janus interfaces to Czech.	2
12.	Provide Windows NT version of ModSAF.	This item has been discussed with cognizant Czech personnel and the decision was made to use the Linux operating system, due to performance issues associated with Windows NT / ModSAF.	2
13.	Allow distribution of Janus to other Czech locations.	Janus may be distributed to other areas provided the terms of the distribution agreement are satisfied.	2
14.	Incorporate radio communications in ModSAF and Janus exercises.	Our proposal includes a radio communications capability.	2
15.	Supply ModSAF 5.0	Our proposal includes the installation of ModSAF 5.0 when it becomes available.	3
16.	Source code for ModSAF and Janus	To be resolved by STRICOM.	3
17.	Building of a communication channel between Brno and Vyskov	Our proposal includes this capability as a Phase 3 update. The reasoning behind this choice is based on the lead-time required to install the capability (long) and the urgency of the requirement (low).	3
18.	Use existing models wherever possible.	We are proposing the use of ModSAF and Janus, and future upgrades to OneSAF,	4

Item Number	Czech Requirement	Proposal Response	Rqmts. Source *
		JCATS and WARSIM.	
19.	Use computer and network components that comply with US Department of Defense Common Operating Environment (COE) standards.	Using UNIX (Linux) operating system, use RISC and PC computers, use Ethernet as the local area network (LAN).	4
20.	Open the observation research of modeling and simulation development trends.	Provide an upgrade path that includes OneSAF, JCATS and other M&S products, as they become available.	4
21.	Open the applied research of war games and strategic crisis management, as the final stage of establishing the STT center at the Military Academy, Brno.	The open architecture that is being proposed will allow the addition of other simulation capabilities as they are developed.	4
22.	The training center should allow performing both theoretical and practical preparation of operating headquarters with computer support.	The proposed exercise controller will provide the capability to construct scenario-based exercises based on theoretical and practical constraints.	4
23.	Place the training center in an Army facility equipped with accommodations, boarding and theoretical and practical education possibilities. It must be equipped with didactic instruments and relevant logistics. It must have staffing and intellectual capacities for education and training by means of constructive simulation.	Locating the Simulation Center at the Military Academy in Brno insures the support for educational objectives including didactic instruments and relevant logistics. The installed simulations are constructive and will support educational objectives through hands on training and most importantly, after action reviews for feedback.	4
24.	The training center must be connected to other training centers via independent data transfer channels for DIS protocols or for protocols conforming to HLA architecture requirements. Subordinate the distribution principal to the efficient integration principal.	The Center at Brno will be connected to other Czech centers using a long haul gateway. Initially, communication will take place using the DIS protocol. The system architecture is designed to take advantage of the upgrades to HLA among the STC simulations as the upgrades take place.	4

Requirement Sources:
1 = Czech report on the Center of Simulation and Training Technology of the Military Academy at Brno.
2 = Brno trip report.
3 = Memo from V. Prenosil, "Proposals for the Next Stage of Project Performance – FMS Case EZ-B-UAE, Army of the Czech Republic Center for Simulation and Training Technology (CSTT), dated 5/31/99.
4 = "Technical Paper Simulation Technology and Infrastructure"

4.2   Results of Feasibility Analysis

A site survey of the facilities and interviews with military personnel and staff in the Czech Republic indicated 3 major areas that requires support and improvements: infrastructure of the facility(ies), Czech Republic terrain databases, and simulation support. These are addressed in the following paragraphs (note: numbering scheme does not indicate priority). A top-level block diagram showing the required improvements is shown in Figure 4.2-1.
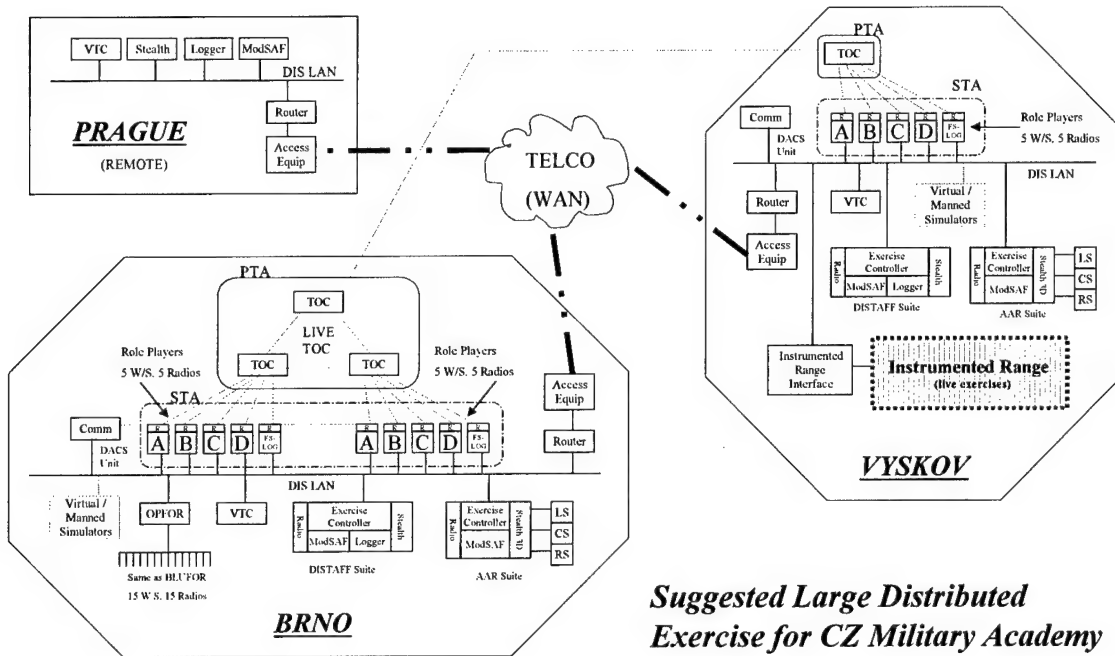
Figure 4.2-1. Projected Upgrades to the Czech Military Academy

4.2.1   Infrastructure Support

4.2.1.1   100 Mbps Network at the Military Academy

Survey of the facilities in Brno indicated that the network capabilities in the Military Academy have features already in place to bring the local network up to a 100 Mbps Fast Ethernet. The following actions will need to be taken:

- 100 Mbps Ethernet cards will need to be added to PCs or workstations with 10BaseT Ethernet cards. These cards can be acquired from computer vendors in the Czech Republic.

- Upgrade the Cabletron 6000 switches by adding 10/100 Fast Ethernet Switching Modules. These modules can be acquired directly from Cabletron or a Cabletron dealer in the Czech Republic.

This upgrade will improve the networking speed/traffic during high demand simulation exercises.

4.2.1.2 Video Teleconference Capability (VTC) between the Military Academy, the Training Center at Vyskov, and the General Staff in Prague

A Video Teleconference (VTC) capability can be established in order to provide Video and Audio teleconferencing for coordination, planning, meeting, administrative functions and after-action reviews between the Military Academy in Brno, Training Center in Vyskov and a General Staff (GS) location in Prague. The VTC package may include NetMeeting from Microsoft (bundled with MS Win 98). This product for Win95, Win98 and WinNT provides the most complete conferencing solution for Internet use. A variety of cameras and headsets can be used for this VTC product.

4.2.1.3 Simulated Radio Communication Capability

A simulated radio network will need to be established at the Military Academy in Brno for the conduct of the projected training exercises. About 30 radios would be needed for communications between roll player cells and the Tactical Operation Center (TOC). Additional radios are required for the Battle Master and After Action Review (AAR) stations. The radio network simulation should also have intercom capabilities for exercise control functions. The radio network simulation should be DIS/HLA compliant. The radio network simulation will incorporate a propagation model that determines the effects of distance, intervening terrain/line of sight, curvature of the earth, and frequency dependent affect on radio transmissions. The Instructor or Battle Master station (Exercise Controller) should have intercom capabilities and the ability to simultaneously monitor multiple frequencies. The AAR station should have the capability to replay radio transmissions in sync with the Plan View Display (PVD) and Stealth workstations. The radio network simulation should also have the capability to transmit and receive live radio transmissions. The simulated radios in the roll player cells and TOC should have the same radio heads as used by the Czech military in their TOCs. Much of the radio network simulation can be Commercial Off The Shelf (COTS) hardware and software. Non-COTS items include the Czech radio heads and a propagation model. The development and manufacture of non-COTS items could be sub-contracted to Czech firms to the greatest extent possible. ADST II would be responsible for overall project management, design, configuration, integration, and test.

4.2.1.4 After Action Review (AAR) Capability

To conduct reviews and evaluation of the distributed simulation exercises, an AAR capability will be required. The AAR capability can be established using a product called *ModIOS* by Motorola. *ModIOS* provides packaged services, two of which are Logger / Player functionality and After Action Reviewer. The Logger/Player offers very basic capability by recording DIS PDU's and allowing playback of the recorded segments using a VCR-like GUI. The heart of the system is the After Action Reviewer. This module allows automatic and manual debrief generation, remote control of ModIOS/EC Plain View Display (PVD), Stealth, and Voice for Debrief Snapshot and Segment Record. A very useful feature allows for the creation of a "take-home" Web-based package consisting of PVD views, Stealth Views, instructor notes and statistical charts. A powerful feature allows for the creation and addition of virtually any Event (using simple C programming script) to the Event List for analysis/AAR review.

4.2.1.5 Long Haul Communications Capabilities to Connect Brno, Vyskov and Prague Location

A long haul capability is required in order to conduct distributed simulation exercises among different sites in the Czech Republic. This requires the installation of long haul equipment necessary for virtual/remote simulation exercises and AAR between the Military Academy in Brno and Vyskov, and a General Staff location in Prague. This task involves the acquisition, installation and test of the long haul services and equipment for these sites. The services and equipment will be acquired from a local telecommunication service provider. It is envisioned that a T1 connection will be acquired to support the video, voice and data requirements (similar to exercises conducted in the USA).

4.2.1.6 Simple Manned Simulation (Virtual) Work Stations

As the Simulation Center training needs grow, the need to add more simulations and simulators from training will also increase. Simple manned simulators of any form can be added to the network as the need arise. These will be DIS compatible manned simulators.

4.2.1.7 Integrating Brno and Vyskov Military Academies

As distributed exercises become a necessity for the Czech Military Academy, there will be a need to integrate the Simulation Center in Brno with the training center at Vyskov, including its future virtual simulators and instrumented ranges.

4.2.2 Databases Support

4.2.2.1 Terrain Database of Selected Czech Republic Terrain for ModSAF

A Czech Republic terrain database that can be used for ModSAF training is not available at this time. This effort would involve the development of the terrain database and translation of this database into a form compatible with the ModSAF simulation. It is estimated that Czech training center personnel will primarily accomplish this task. Our effort will be limited to consulting services regarding ModSAF database requirements.

4.2.2.2 Terrain Database Generation Tool for Janus.

Similar to the above requirement, a Czech Republic terrain database that can be used for Janus training is not available at this time. This task would involve installing and configuring the Janus Terrain Generation Tool on an existing PC, and providing user training. STRICOM would provide the tool as a separate FMS case. The PC would have to be reconfigured to have a DOS partition (either Windows95 or Windows98). The cost is about $20,000 plus the cost to purchase the DTED and DFAD data from the National Imagery and Mapping Agency (NIMA) (this may be free). The alternative may be to buy terrain support from NSC for $5,000 per year. The National Simulation Center (NSC) would then provide terrain for the Czech Republic and any other NATO training areas. The Czechs may be forced to buy this support even if they buy the Terrain Generation Tool because of the difficulty in getting DTED and DFAD data from NIMA.

4.2.3 Simulation Support

4.2.3.1 Upgrade of Janus Software to Version 7.1 International

When available, Janus Version 7.1 must be installed. This has been already approved in the FMS Case.

4.2.3.2 Upgrade of ModSAF Software To Version 5.0 International

When available, ModSAF version 5.0 must be installed. This effort should also include the development of a ModSAF fact sheet. It must also include the implementation of desired updates to the ModSAF behavior, terrain and environment models. This effort will require a modification to the current LOA.

4.2.3.3 Additional Simulations

When needed, to provide additional simulations such as Operations Other Than War (OOTW) and Strategic Operations to the Military Academy in Brno. This effort will require a modification to the LOA.

4.2.3.4 HLA transition

With the advent of HLA, HLA-compatible simulations and simulators will be required at the Military Academy in Brno. Future feasibility studies will be conducted to determine the appropriate steps necessary to implement HLA at the Czech Republic.

4.3 Identification of Phase 2 Effort

A meeting with the MA in Brno was conducted at the end of June 1999 to discuss the Phase 1 findings (as described above) and to define the Phase 2 effort. The agreed scope for Phase 2 is summarized as follows:

a. ModSAF-based exercise to be conducted in December at the Military Academy in Brno. Equipment necessary for the exercise must be ready by then.

b. Parallel activities (CZ MA and STRICOM/ADST II) to explore Czech army specific adaptations for the simulations within the current architecture.

c. STRICOM/ADST II to provide on-site representative starting not later than (NLT) 1 September 1999.

d. STRICOM/ADST II to support Czech military in the analysis of ModSAF and Janus software to determine the differences between desired performance and what the two models can deliver.

e. Requirements for equipment must in cover (includes use of existing PCs):

   1) Military Academy in Brno

      a) AAR Suite (ModIOS-based)

         • AAR Controller

         • ModSAF

         • Simulated Communications (telephone)

         • Stealth 3D (3-channel surfer)

- 3 Projection Systems

b) DISTAFF Suite

- Exercise Controller
- ModSAF
- Simulated Communications (telephone)
- Stealth (single)
- Logger

c) VTC

d) ModSAF Stations

e) Backup Unit (CD ROM Writer)

f) DIS Local Area Network (LAN)

g) Wide Area Network (WAN) Access Equipment

2) Connection to a remote site in Prague (a General Staff location) via a Wide Area Network (WAN).

a) VTC

b) Stealth

c) ModSAF Logger

d) ModSAF Station

e) Projection System (one for ModSAF and one for Stealth/VTC)

f) DIS LAN

g) WAN Access Equipment

A block diagram of the projected Phase 2 configuration is shown in Figure 4.3-1.
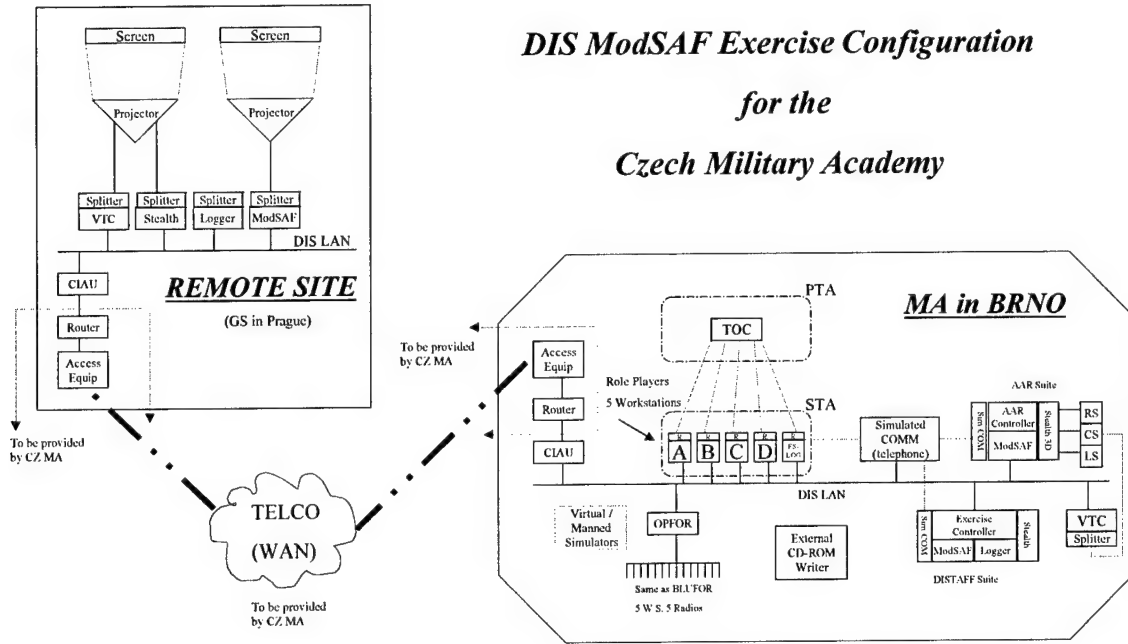
Figure 4.3-1. Phase 2 Projected Configuration

As mentioned above, the details of the Phase 2 effort is being addressed separately from this document in the Technical Approach and Proposal. Other improvements and upgrades will be addressed later as a Phase 3 effort is more clearly defined.

5   OBSERVATIONS AND LESSONS LEARNED

5.1   Planning and Analysis

<u>Observation #1</u>

Value of an international representative (at the Czech Republic).

Discussion #1

Having a local employee / contact (Mr. John Peshel – SAIC Office Director in Prague) that knows the customer, appropriate officials, community, area and the language was extremely helpful for this international mission.

Lesson Learned #1

If STRICOM/ADSTII is going to continue providing overseas support in the international market, such as Europe, the need to for an international representative is essential for the success of these missions.

5.2 Development, Modification and Configuration Activities

None.

5.3 Application Support

Observation #1

Installing current version of ModSAF and Janus may not necessary support future training requirements at the Military Academy. The MA staff was interested in receiving all future upgrades to these simulations, as they became available.

Discussion #1

ModSAF and Janus applications continue to be improved. As new releases of the software available, it is necessary that all users be upgraded accordingly. A common version also improves maintenance and support to customers. One immediate future requirement is the need for a Windows NT compatible application. The networking capabilities at the Military Academy are based on Windows NT architecture. ModSAF Version 5.0 has a Windows NT kernel. This is a currently a working issue.

Lesson Learned #1

Always expect to provide current versions plus all future upgrades. Provisions need to be made so that the Military Academy get the software updates as they are release.

Observation #2

English GUI vs Czech GUI

Discussion #2

ModSAF and Janus applications are solely developed in the English language. For ease of use, the Czech Military Academy would like to have the GUIs converted to the Czech language. This would allow wide training and use by the Czech Army. During training in Orlando and observations during the IDET conference in Brno, Czech personnel needed to rely on the English-versed personnel for translation purposes.

Lesson Learned #2

For ease of use, the software applications should be converted / translated into the language of the country where is being deployed.

Observation #3

No Czech terrain database

Discussion #3

All demonstrations and training were conducted using established terrain databases for the USA and few European countries, none of which were the Czech Republic. The CZ Military Academy would like to have their own terrain database available for training. Again, this would allow wide training and use by the Czech Army. They

would like to take this mission upon themselves and develop the Czech Terrain Database in-house.

Lesson Learned #3

As more European countries approach STRICOM/ADSTII to provide them with support for their Simulation Centers, there is a need for additional terrain databases that closely match the mapping of these countries.

Observation #4

Coordination and delivery of GFE items was more difficult than anticipated.

Discussion #4

Direct shipments to the Czech Republic require lots of coordination and understandings of export laws. Shipping of ADSTII equipment (hardware and software) was coordinated / conducted via STRICOM, who in turn, coordinated the effort via the USA Embassy in Prague. The process can be time consuming and somewhat tedious if the components need to be on site on a short period of time (as was the case with the equipment needed for the IDET demonstrations).

Lesson Learned #4

More time will be allocated to the schedule for shipping and delivery of equipment to the Czech Republic.

5.4 Follow-on Activities Support

None.

6 CONCLUSION

The Czech Simulation Center Support project resulted in a successful installation of a set of simulation workstations for use by the Brno faculty and students. In addition, the simulation center, once configured, was able to support a successful demonstration of the system during the IDET conference, including a visit by the Prime Minister of the Czech Republic. The work on Phase 1 resulted in a proposal for Phase 2 to augment the existing Simulation Center assets to include AAR, Stealth, and Video Teleconferencing. The proposal also considered other upgrades; however, they are currently considered to be beyond the project budget or farther out on the time line.

7 POINTS OF CONTACT

A list of the Points of Contact associated with this Delivery Order is shown as Appendix A of this report.

8 ACRONYMS LIST

A list of the Acronyms in this Report is provided in Appendix B of this Report.

APPENDIX A

Czech Simulation Center Delivery Order Points of Contact

CZECH SIMULATION CENTER DELIVERY ORDER POINTS OF CONTACT

Name	Activity	Phone	Fax	E-mail/Post Office
Mr. John Daniele	STRICOM	(407) 384-5104		John_Daniele@stricom.army.mil
Ms. Vickie Whiteaker	STRICOM			Vickie_Whiteaker@stricom.army.mil
John Neil	STRICOM	(407) 384-5114		John_Neil@stricom.army.mil
Ms. Valerie Deneen	STRICOM	(407) 384- 5448	(407) 384- 3660	Valerie_Deneen@stricom.army.mil
Mr. Dave Stewart	STRICOM	(407) 384-3689		Dave_Stewart@stricom.army.mil
LTC Clem Greek	STRICOM	(407) 384-3656		Clem_Greek@stricom.army.mil
Ms. Shirley Rubens	STRICOM	(407) 384-3677		Shirley_Rubens@stricom.army.mil
Mr. Bryant Lafoy	STRICOM	(407) 384-3864	384-3830	Bryant_Lafoy@stricom.army.mil
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LTC Raymundo Cancel	Chief, Office of Defense Cooperation, Prague	011-420-2-5732-0663 ext 2345		rcancel@san.osd.mil
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Mr. Joe Schwab	SAIC - Orlando	(407) 207-2761		Joseph.R.Schwab@cpmx.saic.com
Mr. Bob Henry	SAIC - Orlando	(407) 306-2561		Robert.B.Henry@cpmx.saic.com
Mr. Don Logston	SAIC - Orlando	(407) 306-4613		Donald.L.Logston@cpmx.saic.com
Mr. Dave Stober	SAIC - Orlando	(407) 306-4067		David.R.Stober@cpmx.saic.com
Mr. Steve Lyne	SAIC - Orlando	(407) 306-4539		Steve.L.Lyne@cpmx.saic.com
Mr. John Peshel	SAIC - Prague	011-420-2-2424-8611 011-420 2 2424-8661	011-420-2-2424-8614	Jpsaic@terminal.cz Husova 7, Praha 1, Czech Republic
Col Vaclav Prenosil	Military Academy, Brno	011-420-5-4118-2155 011-420-5-4118-2755 011-420-5-4118-4953	011-420-5-4118-2888	pre@cs.vabo.cz
Col (Ret) Stanislav Schorm, pH	Military Academy, Brno	011-420-5-4118-2102 011-420-5-4324-1451		Rvssch@vps.vabo.cz
Deputy Minister of Defense Thomas	Czech MoD			
Dalibor Procházka	Military Academy, Brno, CSTT Manager	011-420-5-4118-2720		Dproch@vabo.cz
Col Jindrich Eger	Czech General Director, Property & Assets, MoD			
Maj.Gen. Siba	Head of "J3" Sector of the GS	Responsible for Readiness & Simulation & Training		
Lt.Gen.Sedivy	Chief of the General Staff			

APPENDIX B

Acronyms List

ACRONYM LIST

AAR	After Action Review
ADST	Advanced Distributed Simulation Technology
CDE	Common Desktop Environment
CDRL	Contract Data Requirements List
COE	Common Operating Environment
COTS	Commercial-Off-The-Shelf
CSTT	Center for Simulation and Training Technology
CZ	Czech Republic
DO	Delivery Order
DoD	Department of Defense
DII	Defense Information Infrastructure
DIS	Distributed Interactive Simulation
FDC	Fire Direction Center
FID	Foreign Internal Defense
FMS	Foreign Military Sales
FRAGO	Fragmentary Order
FTP	File Transfer Protocol
GFE	Government Furnished Equipment
GUI	Graphical User Interface
GS	General Staff
H/W	Hardware
IDET	International Simulation Conference
II	Intermediate Intervention
I/O	Input / Output
LAN	Local Area Network
LIC	Low Intensity Conflict
LMC	Lockheed Martin Corporation
LMIS	Lockheed Martin Information Systems
MA	Military Academy
MB	Mega Byte
Mbps	Mega Bits Per Second
MoD	Ministry of Defense
ModSAF	Modular Semi-Automated Forces

MS	Microsoft
NATO	North Atlantic Treaty Organization
NIMA	National Imagery and Mapping Agency
O/C	Observer Controller
OOTW	Operations Other Than War
OPTEMPO	Operational Tempo
OS	Operating System
OSF	Operational Support Facility
PC	Personnel Computer
PDU	Protocol Data Unit
PM	Program Manager
POC	Point of Contact
PVD	Plan View Display
ROE	Rules of Engagement
RAM	Random Access Memory
SAF	Semi-Automated Forces
SEIT	Systems Engineering Integration Team
SME	Subject Matter Expert
SOW	Statement of Work
STRICOM	(U.S. Army) Simulation Training and Instrumentation Command
TOC	Tactical Operations Center
VTC	Video Teleconference
WAN	Wide Area Network
WARSIM	Warfighter's Simulation 2000